

## CLAIMS

1. A method of diagnosing a cooling system of a vehicle engine, characterized by comprising the steps of:

acquiring operating data relative to operation of the cooling system between turn-on of the engine and subsequent turn-off of the engine;

processing the acquired operating data and accumulating the data to create at least one database; and

examining the location of the data within said database to determine malfunction and/or potential malfunction situations of said cooling system.

2. A method as claimed in Claim 1, wherein said step of acquiring operating data relative to operation of the cooling system comprises the step of acquiring fluid temperatures of a radiator of said cooling system.

3. A method as claimed in Claim 2, wherein said acquiring step comprises the step of acquiring the temperature of the fluid supplied to the inlet and outlet of said radiator.

4. A method as claimed in Claim 3, and comprising the step of calculating the temperature difference between the fluid supplied to the inlet and outlet of said radiator.

5. A method as claimed in Claim 4, wherein said accumulating step comprises the step of forming a data structure in which are stored a number of operating states, each defined as a function of the calculated temperature difference value and the acquired outlet fluid temperature value.

6. A method as claimed in Claim 4, wherein said accumulating step comprises the step of forming a data structure in which are stored a number of operating states, each defined as a function of the calculated temperature difference value and the acquired inlet fluid temperature value.

7. A method as claimed in Claim 1, wherein said step of acquiring operating data relative to operation of the cooling system comprises the step of acquiring the rotation speed of a fan associated with a radiator of said cooling system.

8. A method as claimed in Claim 7, wherein said step of processing the acquired operating data comprises the steps of:

calculating the mean value of said rotation speed; and  
calculating the variance of said rotation speed.

9. A method as claimed in Claim 8, wherein said accumulating step comprises the step of forming a data structure storing the mean value of the rotation speed values acquired between turn-on and subsequent turn-off of said engine.

10. A method as claimed in Claim 8, wherein said accumulating step comprises the step of forming a data structure storing the variance of the rotation speed values acquired between turn-on and subsequent turn-off of said engine.

11. A method as claimed in Claim 1, wherein said step of examining the location of the data within said database comprises the steps of:

defining different areas within said database, corresponding to different operating states of said cooling system; and  
checking the location of said data within said areas.

12. A method as claimed in Claim 11, wherein said step of examining the location of the data within said database comprises the step of determining when a maximum time value associated with an acquired operating state located in a danger area is exceeded.

13. A method as claimed in Claim 11, wherein said step of examining the location of the data within said database comprises the step of determining migration of said operating states towards a danger area.